

## REMARKS

In the Office Action dated October 4, 2004, the Examiner rejected claims 24, 25, 27, 30-33, 37, 38, 40, and 43 under 35 U.S.C. §103(a) as obvious over Kodaira (US Patent Number 5,482,250) in view of Bower et al. (US Patent Number 1,978,737). The Examiner also rejected claims 26, 34-36, and 39 under 35 U.S.C. §103(a) as obvious over Kodaira in view of Bower et al. as applied to claims 24 and 38 above, and further in view of Kempton et al. (US Patent Number 3,789,876). The Examiner also rejected claims 28, 29, 41, and 42 under 35 U.S.C. §103(a) as being unpatentable over Kodaira in view of Bower et al. as applied to claims 24 and 38 above, and further in view of Spencer et al. (US Patent Number 5,477,149). Applicant respectfully disagrees with these rejections if applied again to the amended claims.

Claim 24 is directed to an actuator system for use in a flusher. The actuator system includes an actuator, an armature sensor, an external object sensor, and a control circuit. The actuator includes an armature and a coil constructed to displace the armature by application of a coil drive to control operation of an automatic battery-powered flusher. The armature sensor is constructed to detect displacement of the armature. The external object sensor is connected to provide signal to a microcontroller. The control circuit includes a valve driver powered by the battery and constructed to apply to the coil the coil drive. The control circuit is controlled by the microcontroller that initiates application of the coil drive upon receiving a signal originated from the external object sensor, wherein the control circuit being also responsive to an output from the armature sensor to control duration of the coil drive.

Claim 37 is directed to a battery-operated actuator system that includes an actuator, an armature sensor, an external object sensor, and a control circuit. The actuator includes an armature and a coil constructed to displace the armature by application of a coil drive. The actuator also includes a permanent magnet arranged to form a latching actuator. The control circuit is powered by a battery. The armature sensor, powered by the battery, is constructed to detect displacement of the armature and provide an output signal to the control circuit. The external object sensor is powered by the battery and is constructed to provide an object sensor output to the control circuit in response to an external user. The control circuit includes a valve

driver powered by the battery and constructed to apply to the coil the coil drive upon receiving the object sensor output originated from the object sensor or upon receiving the output from the armature sensor, and wherein the control circuit is constructed to generate the coil drive including different power levels based on the output from the armature sensor.

As stated in the Summary, the present invention is directed to a battery-operated system that extends battery life by reducing energy waste that usually occurs in driving the actuator's-armature. None of the cited prior art discloses a system designed to extend the battery life.

In US Patent 5,482,250, Kodaira discloses a battery operated system, but this system is not designed extends battery life. Actually, Kodaira included a second optical sensor that uses more power and thus perhaps reduces battery life. In US Patent 1,978,737, Bower et al. disclose a solenoid valve including two coils 35 and 36. While Bower et al. mention reduction of power, the disclose solenoid doesn't seem to use battery and likely would not be suitable for a long-term battery operation. Just the expenditure of power for holding the core open is 0.6 Watt, as described in col. 1, lines 5 – 15 of US Patent 1,978,737.

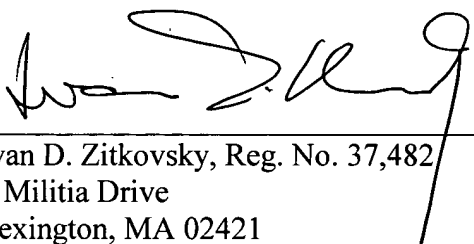
Applicants respectfully submit that claims 24 and 37 are clearly patentable over the cited prior art. No prior art of record discloses the system for controlling water flow as claimed in the pending claims. Specifically, no prior art of record discloses the system claimed in claim 24 including the control circuit that initiates application of the coil drive upon receiving a signal originated from the external object sensor, wherein the control circuit being also responsive to an output from the armature sensor to control duration of the coil drive.

Furthermore, no prior art of record discloses the system claimed in claim 37 including the control circuit having a valve driver powered by the battery and constructed to apply to the coil the coil drive upon receiving the object sensor output originated from the object sensor or upon receiving the output from the armature sensor, and wherein the control circuit is constructed to generate the coil drive including different power levels based on the output from the armature sensor.

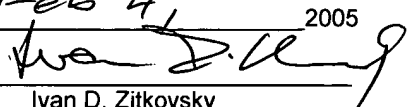
Accordingly, all pending claims are in condition for allowance and such action is respectfully requested.

If the Examiner has any questions or believes telephone call will aid examination and advance prosecution of the application, he is respectfully invited to call to the undersigned representative. If there are any additional fees due in connection with the filing of this amendment, please charge the fees to undersigned's Deposit Account No. 50-2196.

Respectfully submitted,

  
Ivan D. Zitkovsky, Reg. No. 37,482  
5 Militia Drive  
Lexington, MA 02421

Tel. +781-274-6690  
Fax +781-274-6696

<p><b>CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8(a)</b></p> <p>The undersigned hereby certifies that this document is being placed in the United States mail with first-class postage attached, addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on</p> <p><u>Feb 4, 2005</u>  Ivan D. Zitkovsky</p>
---